



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/050,439

01/16/2002

Werner van Hoof

X2/JEC/47123/134050

6495

35114

7590

09/08/2004

ALCATEL INTERNETWORKING, INC.  
ALCATEL-INTELLECTUAL PROPERTY DEPARTMENT  
3400 W. PLANO PARKWAY, MS LEGL2  
PLANO, TX 75075

EXAMINER

ABELSON, RONALD B

ART UNIT

PAPER NUMBER

2666

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/050,439

Applicant(s)

HOOF, WERNER VAN

Examiner

Ronald Abelson

Art Unit

2666

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 11-16, 18, 20-27, 29, 30, 32, 33, 35 and 37 is/are rejected.
- 7) ☒ Claim(s) 5, 10, 17, 19, 28, 31, 34 and 36 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2.3</u> | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2666

***Specification***

1. The disclosure is objected to because of the following informalities: On page 1 lines 3-4, an attorney docket number is referenced.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 6, 13, 15, 22-24, 26, 29, 30, 33, and 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Bremer (US 6,032,190) in view of Isoyama (US 6,049,527).

Regarding claims 1, 13, 22-24, 30, 33, and 37, Bremer teaches a data switch (fig. 2 box 38) comprising an input port (fig. 2 ports 37), an output port (fig 2 ports 36) and memory

Art Unit: 2666

coupled therebetween (fig. 3 box 48, 50, col. 5 line 30). The switch segments the packet into ones of units (col. 4 lines 51-57). Note, when the switch performs an Ethernet to ATM packet conversion the switch "segments the packet into ones of units" since Ethernet is a variable length frame and ATM is fixed length.

Regarding claims 1, 22-24, 30, and 37, Bremer is silent on the data switch generates a discard processing indicator for a packet received on the input port, appends the discard processing indicator to the ones of units, and compares the discard processing indicator appended to the ones of units with a discard criterion to determine whether to discard the ones of units; as specified in claims 1, 22-24, 30, and 37.

Isoyama teaches generating a discard processing indicator for a packet received on the input port (fig. 1 box 11a, 11b, col. 3 lines 12-16), appending the discard processing indicator to the ones of units (fig. 1 box 11a, 11b, col. 3 lines 12-16, fig. 3 cells 36<sub>e-h</sub>, col. 3 lines 46-52), and comparing the discard processing indicator appended to the ones of units with a discard criterion / overflow of the cell buffer to determine whether to discard the ones of units (fig. 3 box 14, col. 3 lines 46-52); as specified in claims 1, 13, 22-24, 30, 33, and 37.

Art Unit: 2666

Regarding claims 13 and 33, Bremer is silent on the packet indicator being assigned to the packets being a number.

Regarding claims 13 and 33, Isoyama teaches the packet indicator being assigned to the packets being a number (col. 3 lines 23-28).

Therefore it would have been obvious to one of ordinary skill in the art, having both Bremer and Isoyama before him/her and with the teachings [a] as shown by Bremer, a data switch for performing conversion between variable length and fixed length packets, and [b] as shown by Isoyama, generating a discard processing indicator for a packet received on the input port, appending the discard processing indicator to the ones of units, comparing the discard processing indicator appended to the ones of units with a discard criterion / overflow of the cell buffer to determine whether to discard the ones of units, and the packet indicator being assigned to the packets being a number, to be motivated to modify the system of Bremer by having the data switch perform packet discarding according to the teachings of Isoyama. These modifications can be performed in software. This would improve the system by helping to prevent buffer overflow.

Art Unit: 2666

4. Claims 3, 15, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bremer and Isoyama as applied to claims 1, 13, and 23 above, and further in view of Isoyama.

Regarding claims 3, 15, and 26, although Bremer teaches the switch has memory, the reference is silent on the data switch stores the ones of units in memory if the units are determined not to be discarded.

Regarding claims 3, 15, and 26, Isoyama teaches the data switch stores the ones of units in memory if the units are determined not to be discarded (fig. 1 box 12, col. 3 lines 36-37). Note, all packets with a packet identifier are stored in memory.

Therefore it would have been obvious to one of ordinary skill in the art, having both the combination of Bremer and Isoyama and Isoyama before him/her and with the teachings [a] as shown by the combination of Bremer and Isoyama, a data switch for performing conversion between variable length and fixed length packets, and [b] as shown by Isoyama, the data switch stores the ones of units in memory if the units are determined not to be discarded, to be motivated to modify the system of the combination of Bremer and Isoyama by queuing packets that are

Art Unit: 2666

deemed not to be discarded. This would improve the system by ensuring that the packets are not dropped in the case where they cannot be processed immediately.

Regarding claims 6, 29, the ones of units are fixed length (Bremer: fig. 2 ATM).

5. Claims 7-9, 12, 18, 21, 32, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bremer, in view of Isoyama, and further in view of Lyon (US 6,721,273).

Regarding claims 7, 18, 32, and 35, Bremer teaches a data switch (fig. 2 box 38).

Bremer teaches an input port (fig. 2 ports 37) and input units segmented from an input data packet (col. 4 lines 51-57). Note, when the switch performs an Ethernet to ATM packet conversion the switch "segments the packet into ones of input units" since Ethernet is a variable length frame and ATM is fixed length.

Bremer teaches an output port (fig 2 ports 36) including one or more output queues, each output queue storing an output unit (fig. 3 box 48, 50, col. 5 line 30) and a switch fabric (fig. 2 box 38) operative between the input port and output port.

Art Unit: 2666

Regarding claims 7, 18, 32, and 35, although Bremer teaches an input port, the reference is silent on the input port generating a tag including a discard processing indicator for appending to ones of input units segmented from an input data packet.

Regarding claims 7, 18, 32, and 35, Isoyama teaches the input port generating a tag including a discard processing indicator for appending to ones of input units segmented from an input data packet (fig. 1 box 11a, 11b, col. 3 lines 12-16, fig. 3 cells 36<sub>e-h</sub>, col. 3 lines 46-52).

Therefore it would have been obvious to one of ordinary skill in the art, having both Bremer and Isoyama before him/her and with the teachings [a] as shown by Bremer, a data switch for performing conversion between variable length and fixed length packets, and [b] as shown by Isoyama, an input port generating a tag including a discard processing indicator for appending to ones of input units segmented from an input data packet, to be motivated to modify the system of Bremer by having the data switch perform packet discarding according to the teachings of Isoyama. This modification can be performed in software. This would improve the system by helping to prevent buffer overflow.



Art Unit: 2666

Regarding claims 7, 18, 32, and 35, the combination of Bremer and Isoyama is silent on the switch fabric including a congestion controller retrieving a level of utilization of an output queue to which a particular input unit is destined and selecting the input unit for discard or not based on the discard processing indicator in the tag appended to the input unit.

Regarding claims 7, 18, 32, and 35, Lyon teaches the switch fabric (fig. 1) including a congestion controller (fig. 1 box 100, col. 8 lines 22-26) retrieving a level of utilization of an output queue (fig. 1 box 16<sub>a-n</sub>, col. 8 lines 22-26) to which a particular input unit (fig. 1 box 20a, col. 8 lines 22-26) is destined and selecting the input unit for discard or not (col. 8 lines 29- 34) based on the discard processing indicator in the tag appended to the input unit (each cell has a loss priority, discarding, col. 16 lines 27-29, 32-38). The examiner corresponds the reference's tag appended to the input unit with Lyon's each cell having a loss priority.

Therefore it would have been obvious to one of ordinary skill in the art, having both the combination of Bremer and Isoyama and Lyon before him/her and with the teachings [a] as shown by the combination of Bremer and Isoyama, a data switch for performing conversion between variable length and fixed

Art Unit: 2666

length packets, and [b] as shown by Lyon, the switch fabric including a congestion controller retrieving a level of utilization of an output queue to which a particular input unit is destined, and selecting the input unit for discard or not based on the discard processing indicator in the tag appended to the input unit, to be motivated to modify the system of the combination of Bremer and Isoyama by incorporating within the switching system of the combination of Bremer and Isoyama a traffic flow controller as taught by Lyon. This would improve the system by helping to reduce overflow in the output buffers.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bremer, Isoyama, and Lyon as applied to claim 7 above, and further in view of Isoyama.

Regarding claim 8, Bremer is silent on the data switch stores the ones of units in memory if the units are determined not to be discarded.

Regarding claim 8, Isoyama teaches the data switch stores the ones of units in memory if the units are determined not to be discarded (fig. 1 box 12, col. 3 lines 36-37). Note, all packets with a packet identifier are stored in memory.

Therefore it would have been obvious to one of ordinary skill in the art, having both the combination of Bremer,

Art Unit: 2666

Isoyama, and Lyon and Isoyama before him/her and with the teachings [a] as shown by the combination of Bremer, Isoyama, and Lyon, a data switch for performing conversion between variable length and fixed length packets, and [b] as shown by Isoyama, the data switch stores the ones of units in memory if the units are determined not to be discarded, to be motivated to modify the system of the combination of Bremer, Isoyama, and Lyon by queuing packets that are deemed not to be discarded. This would improve the system by ensuring that the packets are not dropped in the case where they cannot be processed immediately.

7. Claims 12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bremer, Isoyama, and Lyon as applied to claims 7 and 18 above, and further in view of Lyon.

Regarding claims 12, 21, the combination is silent on the output port transmits to the switch fabric congestion status updates including queue utilization levels for the one or more output queues.

Lyon teaches the output port transmits to the switch fabric congestion status updates including queue utilization levels for

Art Unit: 2666

the one or more output queues (col. 8 lines 29-38). Note, for different congestion levels, different messages are being sent.

Therefore it would have been obvious to one of ordinary skill in the art, having both the combination of Bremer, Isoyama, and Lyon and Lyon before him/her and with the teachings [a] as shown by the combination of Bremer, Isoyama, and Lyon, a data switch for performing conversion between variable length and fixed length packets, and [b] as shown by Lyon, the output port transmits to the switch fabric congestion status updates including queue utilization levels for the one or more output queues, to be motivated to modify the system of the combination of Bremer, Isoyama, and Lyon by having the output ports transmit congestion status updates to the switch fabric. This modification can be performed according to the teachings of Lyon. This would improve the system reducing the probability of output buffer overflow.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bremer, Isoyama, and Lyon as applied to claim 7 above, and further in view of Lyon.

The combination is silent regarding the controller compares the discard processing indicator in accordance with a discard

Art Unit: 2666

criterion selected in accordance with the utilization level of the output queue.

Lyon teaches the controller compares the discard processing indicator (each cell has a loss priority, discarding, col. 16 lines 27-29, 32-38) in accordance with a discard criterion selected in accordance with the utilization level of the output queue (amount of congestion at a given output port, col. 8 lines 22-34).

Therefore it would have been obvious to one of ordinary skill in the art, having both the combination of Bremer, Isoyama, and Lyon and Lyon before him/her and with the teachings [a] as shown by the combination of Bremer, Isoyama, and Lyon, a data switch for performing conversion between variable length and fixed length packets, and [b] as shown by Lyon, the controller compares the discard processing indicator in accordance with a discard criterion selected in accordance with the utilization level of the output queue, to be motivated to modify the system of the combination of Bremer, Isoyama, and Lyon having the output queues perform cell discarding according to the teachings of Lyon. This modification can be performed in software. This would improve the system by providing a proven method for optimally performing cell discarding.

Art Unit: 2666

9. Claims 2, 14, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bremer and Isoyama as applied to claims 1, 13, and 23 above, and further in view of Leon-Garcia (WO 01/39430).

The combination is silent on the discard processing indicator is a random number.

Leon-Garcia teaches the discard processing indicator is a random number (RED, pg. 20 line 30 - pg. 21 line 1).

Therefore it would have been obvious to one of ordinary skill in the art, having both the combination of Bremer and Isoyama and Leon-Garcia before him/her and with the teachings [a] as shown by the combination of Bremer and Isoyama, a data switch for performing conversion between variable length and fixed length packets, and [b] as shown by Leon-Garcia, the discard processing indicator is a random number according to the Random Early Detection 'RED' algorithm, to be motivated to modify the system of the combination of Bremer and Isoyama by using the RED algorithm to perform packet discarding. This would improve the system since the RED algorithm is designed to throttle the rate at which end systems send packets into a network (pg. 3 lines 14 - 27).

Art Unit: 2666

10. Claims 4, 16, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bremer and Isoyama, as applied to claim 1, 13, and 23 above, and further in view of Hughes (US 6,526,060).

The combination of Bremer and Isoyama is silent on the discard criterion is dynamically selected in accordance with a utilization level of an output queue to which the ones of units are destined.

Hughes teaches the discard criterion (col. 5 line 66 - col. 6 line 3) is dynamically selected in accordance with the memory resources (col. 6 lines 10-13). Note, the examiner corresponds the applicant's output queue with the memory resources of the reference.

Therefore it would have been obvious to one of ordinary skill in the art, having both the combination of Bremer and Isoyama and Hughes before him/her and with the teachings [a] as shown by the combination of Bremer and Isoyama, a data switch for performing conversion between variable length and fixed length packets, and [b] as shown by Hughes, the discard criterion is dynamically selected in accordance with the memory resources, to be motivated to modify the system of the combination of Bremer and Isoyama, by modifying the discard criteria based upon the output buffer level. This modification

Art Unit: 2666

can be performed in software according to the teachings of Hughes. This would improve the system in order to prevent the possibility of congestion (Hughes: col. 6 lines 10-13).

11. Claims 11 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bremer, Isoyama, and Lyon as applied to claims 7 and 18 above, and further in view of Leon-Garcia (WO 01/39430).

The combination is silent on the discard processing indicator is a random number.

Leon-Garcia teaches the discard processing indicator is a random number (RED, pg. 20 line 30 - pg. 21 line 1).

Therefore it would have been obvious to one of ordinary skill in the art, having both the combination of Bremer, Isoyama, and Lyon and Leon-Garcia before him/her and with the teachings [a] as shown by the combination of Bremer, Isoyama, and Lyon, a data switch for performing conversion between variable length and fixed length packets, and [b] as shown by Leon-Garcia, the discard processing indicator is a random number according to the Random Early Detection 'RED' algorithm, to be motivated to modify the system of the combination of Bremer, Isoyama, and Lyon by using the RED algorithm to perform packet discarding. This would improve the system since the RED



Art Unit: 2666

algorithm is designed to throttle the rate at which end systems send packets into a network (pg. 3 lines 14 - 27).

***Allowable Subject Matter***

12. Claims 5, 10, 17, 19, 28, 31, 34, and 36 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 5, 10, 17, 19, 28, 31, 34, and 36, although Lyon teaches a timer (fig. 8 box 146, col. 9 lines 35-37), nothing in the prior art of the record teaches or fairly suggests the data switch appends a timestamp to the ones of units for determining a utilization level of the output queue at a time indicated by the timestamp, in combination with all the limitations listed in the claim.

***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald Abelson whose telephone number is (571) 272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be

Art Unit: 2666

reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*RA*  
Ronald Abelson  
Examiner  
Art Unit 2666

\*\*\*

9/7/04

*Seema S. Rao*  
SEEMA S. RAO 9/7/04  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800